July 10, 2000

Title: **Response to Comments on the Biological Opinion on the Interim Protection Plan for Operation of the Wells Hydroelectric Project (FERC Project Number 2149).**

Direct Project Effects and Duration of Biological Opinion

Comment 1: One comment recommended that since there is not a signed Habitat Conservation Plan (HCP), long term benefits of the proposed HCP should not be assumed in this biological opinion.

Response: The vast majority of the available information used in this biological opinion relates specifically to the direct effects of project operations on migrating juvenile and adult salmonids. Although sufficient to assess project specific operations on Endangered Species Act (ESA) listed species, information is under development that will assess all of the indirect or long-term effects associated with project operations. For this reason, the term of this biological opinion was limited to April 1, 2002, pending the development of additional information and subsequent analysis and review, which in turn could provide a satisfactory long-term recovery plan, or an HCP. The proposed HCP standards were not utilized in this biological opinion. Standards and measures specific to a final recovery plan and/or an HCP will be addressed in subsequent ESA consultations. The jeopardy standard used for the purposes of this consultation required the Douglas County PUD to implement all reasonable measures to reduce mortality of listed juvenile and adult UCR (Upper Columbia River) spring-run chinook salmon and steelhead.

Comment 2: Some commentors questioned the absence of a long-term effects analysis and inclusion of performance standards in the Opinion.

Response: The NMFS (National Marine Fisheries Service), with assistance from other Federal and State resource agencies, FERC (Federal Energy Regulatory Commission), the Mid-Columbia River PUDs (Public Utility Districts), and the Tribes, is developing an analysis to evaluate the long-term affects of system operations on listed species, and to determine appropriate escapement and survival goals throughout the basin. This analysis, referred to as the Quantitative Analytical Report (QAR), has not been completed. Survival information specific to the lower Columbia River and to the supplementation practices potentially necessary to bolster the remaining wild stocks of listed upper Columbia River species, has yet to be incorporated. As this additional information becomes available, it will be used to support both recovery planning and future consultations. Specifically, the QAR will help to determine if a 95% juvenile dam passage survival standard and a 91% project survival standard,

in conjunction with improvements in habitat, hatchery practices, and harvest rates, are sufficient to recover listed species. These standards are a significant component of the proposed Anadromous Fish Agreement and Habitat Conservation Plan for the Wells Hydroelectric Project, which currently represents Douglas County PUD's proposed long-term recovery plan. We are in the process of developing an assessment of the effects of a given level of survival on long-term species recovery. This biological opinion requires the PUD to implement all reasonable actions to maximize the survival of ESA listed UCR salmon and steelhead and includes that the interim action, operations as proposed through April 1, 2002, will not jeopardize listed ESUs (evolutionarily significant unit).

Comment 3: Given the results of the draft QAR, it is inappropriate to allow the Wells Hydroelectric Project an incidental take of up to 4.5% for adult chinook and steelhead and 5% for steelhead kelts. A 98% adult survival standard and methods to evaluate compliance with the standard should be placed in this statement.

Response: Please refer to discussions of the draft QAR as noted previously. We currently do not have data available to support a 2% take level for adult chinook salmon and steelhead, but are requiring the Douglas County PUD to implement all reasonable actions necessary to reduce project-related mortality. Douglas County PUD will participate in the development and implementation of kelt studies, and will readdress this issue as additional information becomes available. Specific monitoring requirements have been developed, to the extent practicable, in Section 10.1.1 of the biological opinion to ensure compliance with the upstream migrating adult standards discussed in the document. The NMFS is actively seeking input on reliable specific measures that will serve to assess ongoing impacts to upstream and downstream adult migrants, as well as a method of measuring compliance with required standards.

Hatchery Measures

Comment 4: Artificial production actions should be directly tiered to this opinion.

Response: Artificial production measures and other ongoing hatchery related issues continue to be addressed in other consultation processes. In addition to ESA Section 10 permit #1094, issued to the Washington Department of Fish and Wildlife on February 4, 1998, for the operation of the Wells Hatchery, and the ongoing consultation and review of permit #1196 for operation of the Methow Fish Hatchery, the Douglas County PUD has been participating in the development of the Biological Assessment and Management Plan for the Mid-Columbia River Hatchery Program. This plan has two principle objectives: 1) To help recover natural salmonid populations throughout the Mid-Columbia region so that they can be self-sustaining and harvestable while maintaining their genetic and ecologic integrity; and 2) to compensate for a seven percent mortality rate at each of the PUD hydroelectric projects in a manner that is consistent with the first objective. The co-managers, which include Federal and State resource agencies and Tribes, designed the hatchery related recovery strategies based on continued use of the existing facilities, modified where necessary to accomplish the goals of this program, and recommended new facilities in the region to meet program needs. All of these actions are being considered in concert with the long-term recovery planning efforts being evaluated in the QAR, and although related, are not directly associated with the affects of project operations on ESA listed

species. Therefore, they were not analyzed in this biological opinion.

Comment 5: Current steelhead production for the Methow River Basin is not meeting Wells Settlement Agreement numbers. Production and outplanting levels must be consistent with Settlement Agreement numbers. The PUD should provide for acclimation facilities for steelhead and spring chinook in all tributaries above the Wells Hydroelectric Project. Draft QAR analyses indicate that aggressive supplementation is necessary to increase listed spring chinook and steelhead chances of avoiding extirpation.

Response: Production issues identified in the Wells Settlement Agreement are not applicable to this consultation. As noted previously, an analysis of supplementation measures has not been completed in the QAR. As this information becomes available, we will reinitiate consultation as discussed in Section 12 of the biological opinion.

Comment 6: Carson stock should be utilized to rebuild spring chinook populations above Wells Dam. If they are not used, spring chinook will not avoid extirpation and will consequently not provide Tribes with treaty harvests (NMFS 2000). Straying is a natural event, gives rise to metapopulations, and provides production in areas that are underseeded or areas that are blocked by environmental perturbances. Captive broodstock programs are expensive, experimental and not proven and there are no specific plans on how progeny from these programs will be used in a supplementation effort. Captive broodstock programs should be discontinued in favor of traditional supplementation programs that have demonstrated success (i.e., Priest Rapids Hatchery, Umatilla Basin, Lower Snake River fall chinook).

Response: Please refer to QAR discussions. These issues will be addressed in subsequent ESA consultations regarding the development and implementation of long-term recovery plans.

Adult Fish Passage

Comment 7: One commentor suggested that various adult fish passage measures should be implemented and evaluated.

Response: Comparatively detailed information specific to adult passage is available at the Wells Dam. Stuehrenberg et al. (1995) evaluated spring chinook salmon passage through the Wells Dam in 1993 and although only limited information is currently available for adult steelhead (Alexander et al. 1998), evaluations are currently underway for this species as well. Although not relevant to this biological opinion, sockeye passage was evaluated in1993 and 1997 (Swan et al., 1994; English et al., 1998) and summer/fall chinook information was developed in 1997, 1998 and 1999 (English et al., 1998; Alexander et al., 1998; Nass et al., 2000). Based on the 541 fish detected at the Wells Dam over this three-year period, several inefficiencies were identified at the fishways, particularly in the collection channels and at the fishway entrances. The Douglas County PUD has proposed an operational modification to the adult passage facilities that is intended to address these problems and will implement the modification in conjunction with an adult telemetry evaluation in 2001. They will continue to

investigate modifications as needed based on the results of these upcoming studies. An assessment of the effects of passage through multiple dam systems on the fecundity, spawning success, and survival of adult salmonids is currently under development. Studies to obtain this information were requested during the consultation process, identified in the biological opinion, and are supported by the Douglas County PUD. In addition, a component of project operations analyzed in the opinion specifies that ladder operations will be maintained within standards agreed to by NMFS and other fisheries agencies and tribes. These operations include staff gage maintenance and operation of fishway entrances within specified hydraulic parameters.

Comment 8: The effect of power peaking on adult fish passage should be assessed.

Response: The effects of power peaking on adult fish passage through the Wells Hydroelectric Project pool would be extremely difficult to assess because of the large numbers of test fish and flow regimes required to reach any definitive conclusion. In the radio telemetry studies referenced above, which were conducted during normal project operations including power peaking, passage times through the Wells Hydroelectric Project pool did not identify that delay is excessive as compared to other reaches of the Columbia River.

Comment 9: The west bank trap facility should be re-constructed.

Response: Currently, the facility is being upgraded and trapping operations are being modified by Douglas County PUD to alleviate concerns raised by the NMFS and other agencies. We will coordinate future trap permitting options with our Sustainable Fisheries Division to ensure that adverse passage effects associated with trapping are minimized. In addition, passive trapping (i.e. ladder closure to accumulate adult fish in the trap) will be phased out by the 2001 fish passage season. These operational measures should reduce adverse impacts related to trap activity.

Downstream Migration

Comment 10: Kelts and adult steelhead can fallback in March and during September so the bypass system should be operating from March 20-September 30 as planning dates, to be further refined by adult telemetry studies.

Response: Based on fallback information collected at the Rocky Reach Dam bypass system, outmigrating adult steelhead are moving downstream from approximately April through July. These planning dates will be refined as additional information becomes available (i.e., radio telemetry information or additional fallback data). Of particular concern are post-spawning, downstream migrating adult steelhead, referred to as *kelts*. Very little information is available for this life stage. Although we have been able to identify likely run timing, and have required operating restrictions over this time period to assist downstream migration, additional information is needed before we can determine all of the affects of the hydrosystem or recommend additional measures that may be required to provide increased protection. The Douglas County PUD has agreed to participate in evaluations specific to hydrosystem affects on steelhead kelts in an effort to determine more appropriate long-term measures.

Comment 11: Studies need to be conducted to determine the survival of juveniles through the turbines to determine specific passage route survival.

Response: The juvenile bypass system at the Wells Hydroelectric Project is likely the most successful passage system of any large hydroelectric project in the Columbia River basin. As discussed in the biological opinion, over 92% of the spring outmigrants are guided through this system (Skalski 1993) with little associated injury (RMC Environmental 1993). In addition, the results of project survival studies conducted in 1998 (Bickford et al. 1999) and 1999 (Bickford et al. 2000) were quite high, all of the model assumptions required to estimate survival with the Single and Paired release-recapture models were satisfied and mixing between the treatment and control release groups was documented for the overwhelming majority of the releases conducted. Due to the high bypass system efficiency and comparatively high project survival rates, additional survival information specific to turbine unit operations was considered less important. The conservative range of turbine unit operations assessed in the biological opinion does not substantively affect estimates of total project survival. Therefore, testing turbine survival would likely not result in a significant modification to the management practices evaluated and recommended in the biological opinion.

Comment 12: Turbine units should be operated at 1% peak efficiency during the outmigration.

Response: As noted in the proposed action (Section 3.2.1.2), turbine units will be operated at peak efficiency during the fish passage season. To account for unavoidable operations below peak efficiency (due to turbine unit start up and shut down procedures for example, or during periods of high flow to preclude spill above the Total Dissolved Gas (TDG) cap), the Douglas County PUD has proposed these operations 'to the extent practicable'. This type of operation is common throughout the basin and adequately represents turbine operations to promote maximum fish passage survival.

Comment 13: Studies indicate that bypass system mortality, not including intake and gatewell impacts or tailrace predation, range from 4-8% (CRITFC 2000). The opinion should be revised to reflect this information.

Response: CRITFC (2000) summarizes information pertinent to screened bypass systems, whereas the Wells Hydroelectric Project surface bypass system is a significantly different design utilizing a set of spillway baffles (without dewatering or turbine intake screens) to attract juvenile migrants away from the turbine unit intakes. As a result, fish are not concentrated, handled or confined in this system. As such, survival estimates from screened bypass systems referenced in CRITFC (2000) are not comparable to the modified spill bypass system at the Wells Hydroelectric Project.

Comment 14: The performance standard in the final opinion for juvenile chinook and steelhead should be 98% direct survival and 80% Fish Passage Efficiency (FPE) which is a necessary standard to avoid excessive delayed mortality.

Response: We will consider additional information as provided in support of these standards. In the meantime, standards encompassing all reasonable measures will be adhered to at the Wells

Hydroelectric Project. The 1998 and 1999 survival studies conducted at the Wells Hydroelectric Project satisfied all of the model assumptions required to estimate survival with the Single and Paired release-recapture models. Mixing between the treatment and control release groups was documented for the overwhelming majority of the releases conducted (Bickford et al., 1999; Bickford et al., 2000). This information is considered by NMFS to be the best available, and was used to assess direct project impacts.

Comment 15: The duration of bypass operations for juvenile fish passage should be expanded.

Response: Although small numbers of listed juvenile outmigrants may be passing the project all year, the 95% of the run standard utilized in this and other biological opinions is thought to encompass a distinctly definable component of the outmigration that can be efficiently managed. At the Wells Hydroelectric Project, protection measures are initiated as soon as juvenile salmon are identified at the dam. As a result, the 95% standard is usually surpassed (in 1999 for example, protection measures covered approximately 98% of the run). The early component of the run is protected using this methodology and the bypass system operates continuously throughout the passage season. Although juvenile outmigrants passing the dam from late August through December may not receive the same level of protection, the total numbers of fish likely passing at any given time significantly reduces the effectiveness of project related protection measures. Compensation for these unlisted fish is addressed through other means.

Comment 16: The effect of power peaking on juvenile passage and migration through the Wells Hydroelectric Project pool should be assessed.

Response: Constraints similar to those discussed for adults will also affect this type of evaluation for juveniles. Specifically, there are logistical constraints in developing a study to measure all potential pool and dam passage related impacts, and controlling other environmental variables to allow for statistical certainty. As an alternative, the Douglas County PUD has agreed to evaluate pool and dam passage survival under normal operations (including power peaking). If juvenile survival is identified as a significant issue, it may be necessary at that time to further evaluate power peaking.

Comment 17: Peven et al. (1994) found that juvenile steelhead can spend several years residualizing in Mid-Columbia impoundments. Additional research on the impact of this residualization should be done. Ecological studies on the impacts of the Wells Hydroelectric Project impoundment on trophic orders essential for salmon production should be performed during the period of this opinion. Bickford's juvenile survival studies utilized methods that did not meet critical model assumptions, particularly the assumption that adequate mixing of pool and tailrace release groups had occurred. This raises questions and concerns about bias and validity of the survival estimates.

Response: Peven et al. (1994) described the age-structure of Upper Columbia River summer steelhead smolts. Steelhead smolts collected at the Rock Island Dam ranged in age from one to seven years. Residualism in summer steelhead smolts is a function of fish metabolism. In cooler waters fish growth is retarded resulting in retarded smolt development. The majority of the older aged specimens

examined at Rock Island likely originated from cooler headwater streams where rearing conditions prevent earlier seaward migrations (Chapman et al., 1994). The survival studies at the Wells Hydroelectric Project (Bickford et al., 1999 and Bickford et al., 2000) satisfied all of the model assumptions required to estimate survival with the Single and Paired release-recapture models, as discussed previously. Mixing between the treatment and control release groups was documented for the overwhelming majority of the releases conducted.

Predation Effects

Comment 18: Some commentors indicated that impacts on listed species as a result of predation should be more thoroughly investigated, and more effective measures to reduce predation should be implemented.

Response: Based on the amount of avian and piscivorus predation in project reservoirs, predator control efforts have been implemented throughout the Columbia River basin. The predator control programs were specifically evaluated for their negative impacts or take of ESA listed species at the Wells Hydroelectric Project. From 1997 through 1999, no spring-run adult chinook salmon and only three adult steelhead have been caught (and reported released unharmed) as a result of predator removal programs implemented at the Wells, Rocky Reach, and Rock Island hydroelectric projects. Efforts to reduce avian predation have no known negative impacts on listed species. At this time, other more effective measures to reduce predation at the Wells Hydroelectric Project are unknown. However, the Douglas County PUD has indicated a willingness to consider implementing additional protocols as they become available.

Comment 19: The quantitative effect of the predator program must be analyzed and determined. Population structure evaluations must be implemented. The USGS (US Geological Survey) has accomplished such evaluations for the Lower Columbia and this work should be carried forth specific to this opinion.

Response: This information has been and will continue to be developed by the Douglas County PUD through the study of resident fish population dynamics (Burley and Poe, 1994; Kvam, Campbell and Rensel, 1999; Bickford and Skillingstand 2000) and through predator census and removal efforts (Bickford, 1996; Bickford 1997; Jerald, 1999; Jerald 2000). Although predator population dynamics were not specifically discussed in the biological opinion, the information was utilized by the Douglas County PUD to justify continuing the predator removal programs.

Water Quality Monitoring and Evaluation Activities

Comment 20: One comment recommended that water quality monitoring should be more extensive than specified in this biological opinion.

Response: Measures proposed by the Douglas County PUD to control TDG at the Wells Hydroelectric Project and the monitoring measures required in the incidental take statement will increase the survival of listed species by ensuring that in-season operations do not exceed 120% of saturation. The Douglas County PUD has agreed to participate in additional studies, as described in

the biological opinion, to assess the effects of project operations on water quality throughout the Mid-Columbia River. This additional information will be used to support the continued development of a long-term plan.

Cumulative Effects

Comment 21: The operation of the Federal Columbia River Power System (FCRPS) highly impacts listed species and their critical habitat in the entire mid-Columbia Reach, including at the Wells Hydroelectric Project. The ESA Section 7 consultation for the FCRPS and ESA Section 7 consultations with FERC on the Wells Hydroelectric Project must be integrated with respect to cumulative impacts of the listed species and their critical habitat.

Response: We concur with this comment and are addressing the impacts of the FCRPS in a separate consultation. We will reinitiate consultation as discussed in Section 12 of this biological opinion if new information reveals additional affects that were not considered. The survival studies that have been conducted to date include an assessment of upstream operations as an uncontrolled variable. Therefore, this information has been indirectly included in our analysis. As discussed in Sections 7 and 9 of this biological opinion, we know of no other impacts that would affect our conclusions at this time.

Comment 22: NMFS should address the actions in this opinion and the other opinions from a cumulative impact perspective for the entire Mid-Columbia reach. This perspective was lost when NMFS separated this consultation into three opinions.

Response: The consultation process was conducted concurrently for each of the Mid-Columbia River PUD projects with the intent of facilitating a cumulative analysis. Separate consultations at each of the PUD projects were required due to the wide range of actions considered necessary at each dam to satisfy the jeopardy standard. However, the combined impacts of all the PUD projects are being considered in each consultation even though separate biological opinions are being developed. We will incorporate any additional, specific cumulative impacts according to the standards established in the ESA.

References:

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